ENGINEERING 'ROUND ABOUT COLUMBUS

Inspected by
HOWARD CRUSEY and MERRILL WEED

Note: Little by little we are "getting around" to see the work of engineers in and near Columbus. So far we have devoted most of the space to civil, industrial, and mechanical engineering with incidental mention of architects and electricals. Next month we plan to take a look at some things the chemicals do.

XII. A. R. C. B.

No, this is not one of the alphabetical agencies of the Government. The letters stand for Automatic Reclosing Circuit Breaker, a Columbus company that has just moved into its new factory on West Fifth Avenue, almost within sight of the University.

The World's Fair at Chicago in '93 is said to have had a great influence on architecture. The Fair of '33 had its influence, too, on buildings such as this new factory. It is nearly all one floor, and covers almost an acre. Space and light are noticeable features, particularly light; a large part of the walls are glass and the roof is stepped at intervals—the modern version of the saw tooth—with windows in upright portions.

Everything is new. In the entrance is the subtle, unforgettable smell of plaster, an aroma that persists a long time after the autocrat of the mortar board has taken his trowels and moved away. The earth around will be landscaped, after it thaws out. Later, also, the sign saying this is the company's future home and telling who the architect is, will come down, the names of the officials will go on the doors, and all will assume an orderly air of permanence—what the well-housed company should look like.

Let us hope that the plans include parking space for the employees' automobiles, now scattered around. A modern building needs this last modern touch.

And there are many of the automobiles, for this busy company has about three hundred workers, some forty or fifty of them on the night shift.

The things these workers are making enter into one of the most common manifestations of modern life, refrigerators. A refrigerator, or any other device that keeps things cold or hot, must have thermostatic control to turn on the current when the temperature is not just right, to turn it off when it is no longer needed. Thousands of those automatic switches are made in this Columbus factory.

Everything is evolutionary. When the company was started, about twenty years ago, its name was an exact reflection of its product, reclosing switches to take care of trouble in electric circuits. Street car systems needed them badly. You can't use fuses there, even if you want to. Those circuit breakers are still made, as well as switches for special purposes and spot vulcanizers for repairing auto tires, but the cold controls are the bulk of the business.

And all are based on a fundamental principle of physics, the change of volume with change in temperature.

XIII. The Engineer Applies the Principle

Knowing principles of physics is important, but not enough; the principle must be applied. The inventive genius who built the circuit breakers and who has continued as technical adviser and manager is Mr. E. C. Raney, an Ohio State graduate. The product trade name, "Rancostat," was devised in his honor.

Space is needed in the factory for the orderly movement of the materials that go into the finished product. What a job it must be, deciding where to put each press, where something shall go in and come out. There is a host of tiny parts. Punch presses stamp some out of ribbons of metal. Milling here, welding there, one operation after another, and the parts are made, ready for the assembly.

Everywhere there are safety measures—guards to save hands from the presses, collectors of dust and fumes. A modern factory must guard the health of its workers. It pays in increased efficiency as well as in social values.

Then the assembly. The workers, many of them nimble-fingered women, put the tiny parts together, piece by piece, carefully performing some allotted task and sliding the embryo "stat" to the next operator. Monotonous? Perhaps. But easier and much faster than for each one to go through all the operations. Productive of as much creative joy, more refrigerators at lower prices, and more money for the workers.

We wonder how the workers keep their fingers flying, particularly when visitors are looking on. They show no stage fright. And they are extraordinarily cheerful about it.

Piece by piece the parts grow. Little streams meet. At last the switches are complete and tested for accuracy in covered vats of alcohol at controlled temperatures. They must work. Those that don't, go out. Those that do are packed and shipped to the refrigerator plants.

COORDINATION OF ENGINEERING

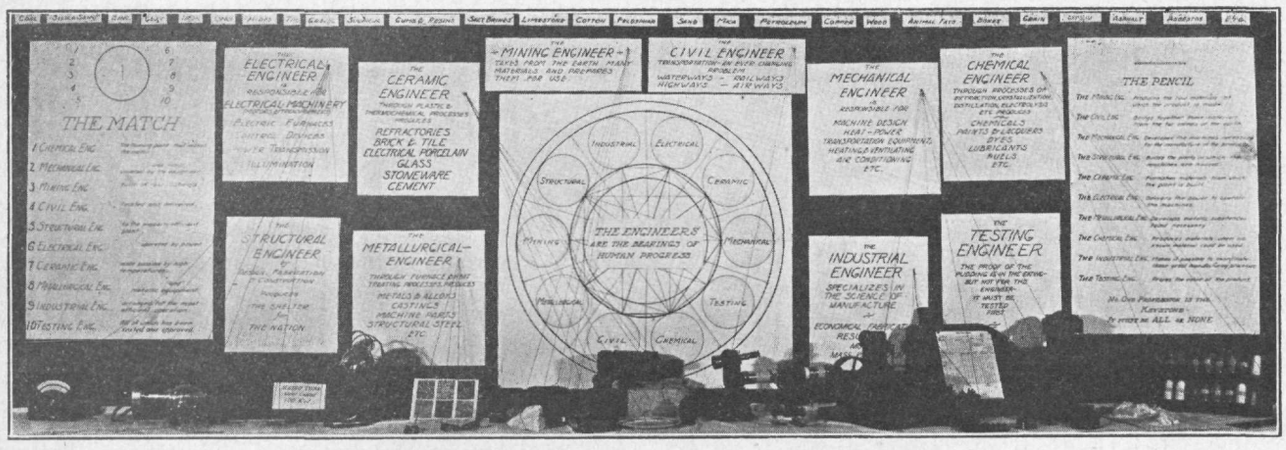

Exhibit at the 57th annual meeting of the Ohio Society of Professional Engineers. The branches of engineering, represented as the bearings of our industrialized society, are connected with each other and with articles in everyday use—a match, an electric fan, a pencil, artificial silk, and so forth. This conception of the profession was prepared by Henri J. Hoffman at Ohio State's Engineering Experiment Station.

You have a "Frigerator," you say, and you swear by it. Its ice cubes are the best that electricity can freeze. Its name is known around the world. The chances are, though, that the heart of it, the control switch, anonymous in the completed article, was made here in Columbus at the ARCB.

For the excellence of the whole depends on the excellence of the parts. The cold control is a vital link in the refrigerator chain.

XIV. When Engineers Get Together

You wouldn't think of it, but going to an engineering meeting is a legitimate part of inspecting technical Columbus. We looked in on the opening day of the annual convention of the Ohio Society of Professional Engineers.

When engineers get together the results are amazingly like a conclave of doctors, lawyers, or any other professional men. They have on their Sunday best and they wear badges. They shake hands, they register, and they listen to speeches. Among them are their fellow engineers who work for manufacturers and who exhibit the things they have to sell.

The session we attended was a movie. A silent picture seems strange, nowadays, and the projector whines wickedly; we miss the noisy piano that used to drown it out. Printed subtitles strike hard on minds accustomed to hearing Graham McNamee and Edwin C. Hill.

The movie was a Jeffrey film of the "Rivers of Dirt" at Grand Coulee Dam. Interesting material for one reel but too slow in three.

Here were big shovels biting off dirt and rock, emptying their spoil—their loose-hung jaws flapping—into trailers. Pneumatic tires looked strange on the big wheels. The trailers were dumped onto a grizzly, a screen of big bars to catch stones too large for the "river." A "bulldozer" butted the stones off to one side.

For one of the exhibits, great credit goes to Henri J. Hoffman, a quiet chap who works at the Engineering Experiment Station. Hoffman has sketched the field of Engineering, depicting its branches as the bearings for the world's work. Laced cords show the connection between the branches, each depending on the others, all uniting to transform the raw materials of Nature into the things men live by.

STAR GROUP REVEALED

To Edwin P. Hubble, of the Mt. Wilson Observatory in California, goes the honor of securing the longest-range photograph ever made. The three and a half hour exposure showed an unnamed cluster of stars, nearly sixteen quadrillion miles distant from the earth. The rays of light that reached the camera during the test, started to the earth nearly a half billion years ago.

The giant 100-inch telescope used in the procedure was constantly trained upon the center of the star group by a delicate clockwork mechanism synchronized with the rotation of the earth. But even greater precision was required, so Dr. Hubble continually regulated the electrical controls as he sat before the sighting eyepiece. The controls kept the image of a star centered upon a pair of illuminated cross hairs.

Wayne Hunter of Colton, Oregon, has built a motor smaller than a pea which runs on a flash light battery. He claims that the mechanism is capable of 2,000 revolutions per minute.